

**PROCEEDINGS**  
OF THE  
CALIFORNIA ACADEMY OF SCIENCES  
FOURTH SERIES

VOL. XVII, No. 7, pp. 205-246, plates 11, 12      JUNE 29, 1928

---

VII  
**SOME PYRAMIDELLIDÆ FROM THE GULF OF CALIFORNIA<sup>1</sup>**

BY  
FRED BAKER  
G. DALLAS HANNA  
AND  
A. M. STRONG

In the spring and summer of 1921, the California Academy of Sciences sent an expedition to the Gulf of California for the purpose of making general collections in natural history. The complete itinerary with a map was published in 1923.<sup>2</sup> Many technical reports have resulted from a study of the specimens collected. Three of these have treated of various groups of living marine mollusca.<sup>3</sup> The expedition was accompanied by one of the present writers (Dr. Baker) for the purpose of making collections in this group. There was opportunity at times to dredge in shallow water but the total results in this

---

<sup>1</sup> In this paper there have been assembled the results of the Academy's Expedition to the Gulf of California in 1921; the Expedition to the Revillagigedo Islands in 1925 (Cape San Lucas portion only); and some miscellaneous collections in so far as they relate to this group of mollusks. For this reason the paper has not been given a number in any one of the Expedition Series of reports. (*Editor.*)

<sup>2</sup> Slevin, Joseph R. Expedition of the California Academy of Sciences to the Gulf of California in 1921. General Account. <Proc. Calif. Acad. Sci., 4th Ser., Vol. 12, No. 6, 1923, pp. 55-72.

<sup>3</sup> No. 37. MacFarland, F. M. Opisthobranchiate Mollusca. <Op. cit., Vol. 13, No. 25, pp. 389-420, pls. 10-12.

No. 34. Baker, Fred. Mollusca of the family Triphoridae. <Op. cit., Vol. 15, No. 6, pp. 223-239, pl. 24.

No. 35. Baker & Hanna. Marine Mollusca of the order Opisthobranchiata. <Op. cit., Vol. 16, No. 5, pp. 123-135, pl. 14.

June 29, 1928

endeavor were hardly satisfactory; the weather sometimes interfered with such work from a small boat and often the bottom was so completely overgrown with algæ that the dredge could not be made to "dig in."

Nevertheless, some small but very rich samples were obtained at a few favorable localities. In most of these, minute mollusca were abundant and those belonging to the family Pyramidellidæ form the basis of the present contribution.

In addition, two other collections have been incorporated in order to make the paper more complete. One of these was made by Captain George D. Porter during his visit to the Gulf. He was in the employ of Miss Jeanette M. Cooke of San Diego, California, and became an excellent collector. Conchology suffered a real loss when he was killed in 1896.<sup>4</sup> His dredgings have only lately been sorted. Unfortunately they often bear no more definite locality label than "Gulf of California" but since he obtained several very striking species it seems best to describe them.

The other collection incorporated herein was obtained in 1925 at Cape San Lucas, Lower California, by G. Dallas Hanna and Eric Knight Jordan while returning from the Revillagigedo Islands. The fauna of this locality is similar in many ways to that of the Gulf and the two undoubtedly belong to the same zoo-geographic province. Cape San Lucas is a classical locality in marine conchology because of the collections which have been made there in the past; it is the type locality of many species. The Academy's 1925 party collected by dredging in water up to 10 fathoms in depth close to the shore of the little bay and 100 to 200 yards to the east of the granite promontory which forms the cape. Some very rich collections were made also at the wash of the tide, little windrows of various débris having been thrown up. A very strong current sets around the cape and into the bay, so that the shells found in shallow water or even on shore may have lived in greater depths than the collecting apparatus used was able to reach.

The work of identifying west American species in this family of mollusca is made possible through the excellent monograph prepared some years ago by Dr. William H. Dall and

---

<sup>4</sup> For details of Captain Porter's death, see p. 218.

Dr. Paul Bartsch<sup>5</sup>; without this report our task would have been very nearly impossible.

The photography for the present paper has been made the subject of protracted research. One of us has lately pointed out<sup>6</sup> that such small objects present almost insurmountable difficulties with the present development of photographic optics. Through the use of a varied selection of superb lenses it is believed that illustrations thoroughly reliable for identification purposes have been obtained without recourse to the usual amount of retouching. We are under obligations to Dr. Barton Warren Evermann, Director of the Academy, for approving the purchase of the optical equipment used.

### 1. *Pyramidella (Voluspa) auricoma* Dall

*Pyramidella auricoma* DALL, Blake Report, Gastropoda, 1889, p. 332.

*Pyramidella (Voluspa) auricoma* DALL, DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 20, pl. 1, fig. 3.

Specimens apparently of this species, were taken at La Paz and San Evaristo Bay, Lower California; at San Gabriel Bay and Isthmus Bay, Espiritu Santo Island; and at West Anchorage and Amortajada Bay, San Jose Island, Gulf of California. The best preserved of these are light horn-colored, variously mottled with darker shades, suggesting that the "yellowish-white" type specimen may have been faded.

### 2. *Pyramidella (Longchæus) adamsii* (Carpenter)

*Obeliscus adamsii* CARPENTER, Rept. Moll. West Coast N. Amer. <Brit. A. A. S. 1863 (1864), pp. 546, 547. = *Obeiliscus ? conicus*, jun. CARPENTER, Cat. Maz. Shells, 1856, pp. 409, 410.

*Pyramidella (Longchæus) adamsi* (CARPENTER), DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, pp. 21, 22, pl. 1, figs. 6, 6a.

Specimens of this species were taken at La Paz, Puerto Escondido and Coyote Bay, Concepcion Bay, Lower California; in four fathoms off the Salt Works, San Jose Island and at San Gabriel Bay and Isthmus Bay, Espiritu Santo Island, Gulf of California.

<sup>5</sup> Dall, Wm. H. & Bartsch, Paul. Bull. 68, U. S. Nat. Mus., 1909.

<sup>6</sup> Hanna, G. Dallas. The photography of small objects. <Trans. Am. Micr. Soc., Vol. 46, No. 1, January, 1927, pp. 15-25.

### 3. *Pyramidella* (*Longchæus*) *bicolor* Menke

Plate 11, figure 1

*Pyramidella bicolor* MENKE, Malak. Blätt., Vol. 1, 1854, p. 28.

*Pyramidella* (*Longchæus*) *bicolor* MENKE, DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, pp. 22, 23, pl. 1, fig. 2.

Specimens agreeing well with the description and figure given by Dall & Bartsch were taken at Puerto Escondido, San Luis Gonzaga Bay and Coyote Bay, Concepcion Bay, Lower California. The pinkish coloration is present but indistinct. The figured specimen retains the nuclear whorls which have not heretofore been described or figured. These are relatively small, placed almost vertically and about half immersed in the succeeding whorl.

### 4. *Pyramidella* (*Longchæus*) *mazatlanica* Dall & Bartsch

*Pyramidella* (*Longchæus*) *mazatlanica* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 24, pl. 1, figs. 7, 7a.

A single immature individual of this species was taken at Cape San Lucas, Lower California.

### 5. *Turbonilla* (*Turbonilla*) *centrota* Dall & Bartsch

*Turbonilla* (*Turbonilla*) *centrota* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 30, pl. 2, figs. 6, 6a; new name for *Chemnitzia acuminata* C. B. ADAMS, Ann. Lyc. Nat. Hist. of N. Y., 1853, p. 388; not *Turbonilla acuminata* (GOLDFUSS), 1852, which belongs to *Turritella*.

Five specimens of this species were taken at Cape San Lucas.

### 6. *Turbonilla* (*Turbonilla*) *lucana* Dall & Bartsch

*Turbonilla* (*Turbonilla*) *lucana* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 32, pl. 2, fig. 3.

Seven specimens of this species were taken at Cape San Lucas.



7. *Turbonilla (Chemnitzia) amortajadensis* Baker, Hanna & Strong, new species

Plate 11, figure 2

Shell small, thin, slender, elongate-conic, translucent, shining, milk-white; nuclear whorls  $2\frac{3}{4}$ , forming a rather high helicoid spire, which is nearly vertical and immersed about one-fourth in the succeeding whorl; postnuclear whorls  $7\frac{1}{4}$ , well rounded, the curve being rather greater above than below, scarcely shouldered above, rather high between the sutures, marked by moderate and moderately protractive axial ribs, of which 12 appear on the first and 14 on the remaining whorls; interspaces slightly wider than the axial ribs, terminating slightly posterior to the sutures and very abruptly below the periphery of the last whorl; sutures moderately impressed; base well rounded, rather long, showing microscopic growth lines but no other sculpture; aperture broadly, irregularly subovate; posterior angle obtuse; outer and basal lips thin, regularly, increasingly rounded to a subangular junction with the columella; columella very slightly concave, scarcely reflected, joining the parietal wall at an obtuse angle and with no fold apparent at its insertion; parietal wall nearly straight and scarcely calloused. Length, 2.8 mm.; diameter, .75 mm.

*Holotype*: No. 4001, Mus. Calif. Acad. Sci., collected by Fred Baker in 1921, from Amortajada Bay, San Jose Island, Gulf of California, in two to three fathoms.

The shell somewhat resembles *T. aculeus* C. B. Adams<sup>7</sup>, but is smaller, with more rounded whorls, fewer axial ribs and intercostal spaces terminating above the sutures. In this last respect the species agrees with *T. paramæa* Dall & Bartsch<sup>8</sup>, but again the Amortajada Bay shell has far fewer ribs. In the key to the subgenus *Chemnitzia*<sup>9</sup>, this species could be placed immediately after *T. paramæa*.

<sup>7</sup> Ann. Lyc. Nat. Hist. N. Y., Vol. 5, 1852, p. 388.

<sup>8</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 37, pl. 2, figs. 4, 4a.

<sup>9</sup> Bull. 68, U. S. Nat. Mus., pp. 33, 34.

8. *Turbonilla (Chemnitzia) muricata* (Carpenter)

Plate 11, figure 3

*Chemnitzia muricata* CARPENTER, Cat. Maz. Shells, 1856, p. 428.*Turbonilla (Chemnitzia) muricata* (CARPENTER), DALL & BARTSCH, Bull. 68, U. S. Nat. Mus. 1909, p. 36, pl. 2, fig. 9.

Two specimens agreeing well with the description and figure given by Dall & Bartsch were taken at Northeast Anchorage, Monserrate Island, Gulf of California.

9. *Turbonilla (Chemnitzia) kelseyi* Dall & Bartsch*Turbonilla (Chemnitzia) kelseyi* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 39, pl. 2, figs. 16, 16a.

Specimens of this species were taken at San Francisquito Bay, in three to four fathoms, San Luis Gonzaga Bay, Coyote Bay, Concepcion Bay, and Cape San Lucas, Lower California; at Amortajada Bay, San Jose Island, Gulf of California. The most southerly locality heretofore reported for this species is San Ignacio Lagoon, Lower California.

10. *Turbonilla (Strioturbonilla) buttoni* Dall & Bartsch*Turbonilla (Strioturbonilla) buttoni* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 43, pl. 3, figs. 4, 4a.

Specimens of this species were taken at San Luis Gonzaga Bay, and in about four fathoms at La Paz, Lower California; also at Monserrate Island and the West Anchorage, San Jose Island, Gulf of California. The most southerly locality heretofore reported for this species is Abreojos Point, Lower California.

11. *Turbonilla (Strioturbonilla) mexicana* Dall & Bartsch*Turbonilla (Strioturbonilla) mexicana* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 45, pl. 3, figs. 5, 5a.

Single specimens of this species were taken at West Anchorage and at Amortajada Bay, San Jose Island, Gulf of California.

12. *Turbonilla* (*Strioturbonilla*) *schmitti* Bartsch

Plate 11, figure 4

*Turbonilla* (*Strioturbonilla*) *schmitti* BARTSCH, Proc. U. S. Nat. Mus., Vol. 52, 1917, p. 644, pl. 43, fig. 8.

Specimens of this species were taken at San Francisco Bay and Cape San Lucas, Lower California. They agree in most particulars with Bartsch's description and figure, but the axial ribs show some extension over the base and a tendency of their upper extremities to spread across the intercostal spaces in a manner not noted by him.

13. *Turbonilla* (*Strioturbonilla*) *c-b-adamsii* (Carpenter)

*Chemnitzia C-B-Adamsii* CARPENTER, Cat. Maz. Shells, 1856, p. 427.

*Turbonilla* (*Strioturbonilla*) *c-b-adamsii* (CARPENTER), DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 52, pl. 3, fig. 3.

A single specimen of this species in the Baker collection was taken by George D. Porter in the "Gulf of California."

14. *Turbonilla* (*Strioturbonilla*) *phanea* Dall & Bartsch

*Turbonilla* (*Strioturbonilla*) *phanea* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus. 1909, p. 56, pl. 4, figs. 4, 4a.

The species was taken in beach drift by George D. Porter on Espiritu Santo Island, Gulf of California; specimens have been deposited in the collections of Strong, Baker and the Academy.

15. *Turbonilla* (*Strioturbonilla*) *nahuana* Baker, Hanna & Strong, new species

Plate 11, figure 5

Shell very small, regularly elongate-conic, with no spiral sculpture except occasional patches of minute spiral striations; slightly shining, milk-white; nuclear whorls small, decidedly exerted, smooth, not quite vertically placed, about one-fourth immersed in the succeeding whorl; postnuclear whorls  $7\frac{1}{4}$ , narrowly, horizontally shouldered above, rather evenly and strongly rounded, marked by quite broad, sinuous axial ribs

extending to the umbilical region, nearly vertical on the first turn but becoming strongly protractive on the lower whorls, about 12 appearing on the first turn, 14 on the second to the fifth, and 20 on the last; intercostal spaces shallow, generally narrower than the ribs; sutures well impressed, rendered sinuous by the ends of the axial ribs; periphery not defined; base evenly rounded, marked by strong extensions of the axial ribs; aperture irregularly subovate, effuse near the base of the columella; outer lip thin, showing the external sculpture plainly within, rather strongly curved from the beginning; basal lip rather less curved, reflected below to reinforce the columella; columella slightly concave, nearly vertical, not revolute, rather broadly reflected and free throughout its whole length. Length, 2.5 mm.; diameter, 0.8 mm.

*Holotype*: No. 4004, Mus. Calif. Acad. Sci., and one paratype in the Baker collection, taken by George D. Porter in the "Gulf of California."

The species has somewhat the appearance of a *Salassiella* of the genus *Odostomia* falling between *O. lara* Dall & Bartsch and *O. richi* Dall & Bartsch,<sup>10</sup> but we are unable to find evidence of a varix, possibly because the two specimens may be immature. We have therefore referred it, with some doubt, to *Turbonilla* (*Strioturbonilla*). It seems to have no close affinity with any west coast *Strioturbonilla*.

16. *Turbonilla* (*Strioturbonilla*) *chalcana* Baker, Hanna & Strong, new species

Plate 11, figure 6

Shell small, elongate-conic, marked by extremely fine spiral sculpture which crosses the axial ribs at some points; translucent, shining, milk-white; nuclear whorls  $1\frac{3}{4}$ , somewhat exserted, not quite vertically placed and about one-fourth immersed in the succeeding turn; postnuclear whorls  $8\frac{1}{4}$ , the lower three or four high between the sutures, narrowly, tabulately shouldered above, very slightly appressed below the sutures, this being more marked in the interspaces than on the axial ribs, whorls well rounded, especially on the lower one

<sup>10</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 133.

fourth, marked by narrow, rounded, very sinuous and irregular and irregularly placed, slightly protractive axial ribs, about 12 appearing on the first three whorls and 24 on the succeeding turns; intercostal spaces shallow, a little wider than the axial ribs, ending a little above the sutures on the lower whorls and at the periphery on the last whorl; sutures well impressed periphery defined by the ends of the intercostal spaces; base well rounded, covered by distinct lines of growth and marked by feeble extensions of the axial ribs which reach the umbilical region but with no defined intercostal spaces; aperture rather small, subpyriform; outer and basal lips thin, showing the external sculpture plainly within, the outer following the tabulate shoulder, then bending sharply down in a moderate curve to join the basal lip; basal lip more curved, effuse near its junction with the columella; columella nearly straight and vertical, broadly reflected, adnate only at its upper fifth; parietal wall narrowly and thinly calloused. Length, 3.6 mm.; diameter, 1.1 mm.

*Holotype*: No. 4005, Mus. Calif. Acad. Sci., and three paratypes in the Baker collection, taken by George D. Porter, in the "Gulf of California."

In the key to the subgenus *Strioturbonilla*<sup>11</sup> this species falls with *T. calvini* Dall & Bartsch,<sup>12</sup> from La Paz, Lower California, a species which it closely resembles in size and shape, but from which it differs radically in having wider axial ribs and narrower interspaces and more of them on the lower turns.

17. *Turbonilla* (*Pyrgolampros*) *gonzagensis* Baker, Hanna & Strong, new species

Plate 11, figure 7

Shell of medium size, elongate-conic, light horn-colored; nuclear whorls about two, smooth, opalescent, inclined nearly at a right angle to the succeeding whorl, in which they are scarcely immersed; postnuclear whorls nearly 11, moderately high between the sutures, slopingly shouldered above, very slightly exserted, moderately rounded, with a slight flattening

<sup>11</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 40.

<sup>12</sup> Op. Cit., p. 48, pl. 4, figs. 1, 1a.



in the middle, marked by prominent, rounded, increasingly retractive axial ribs, of which on the type 14 appear on the earlier whorls, increasing gradually to 18 on the latest; axial ribs extending strongly over the periphery without a perceptible break and gradually decreasing to the umbilical region; interspaces moderate, distinctly broader than the ribs; shell everywhere covered by numerous, distinct, wavy spiral incised lines, crowded towards the summits of the whorls, very distinct in the interspaces, less marked over the ribs, and most distinct on the base; sutures impressed but not channeled, in places rendered crenulate by the extremities of the axial ribs; base well rounded, rather short; aperture suboval; posterior angle acute; outer lip thin, beginning rather straight, the curve increasing to a juncture with the basal lip, which sweeps in a full curve into the concave columella; columella scarcely reflected, with a moderate fold at its insertion; parietal wall very thinly calloused. Length, 6.4 mm.; diameter, 1.4 mm.

*Holotype*: No. 4006, *paratypes*: Nos. 4007-4010, Mus. Calif. Acad. Sci., from **San Luis Gonzaga Bay, Lower California**, in three fathoms. In addition, specimens were taken at Puerto Escondido in three fathoms and in four fathoms at La Paz, Lower California; also in three to four fathoms, at West Anchorage, San Jose Island, Gulf of California; all were collected by Fred Baker, in 1921.

The species can be differentiated from all others of the subgenus *Pyrgolampros* described from this coast by the small number of narrow, retractive axial ribs on all the whorls. In the key to the subgenus *Pyrgolampros*<sup>13</sup> this species could be placed immediately after *T. halibrecta*.

18. *Turbonilla* (*Pyrgolampros*) *pazensis* Baker, Hanna & Strong, new species

Plate 11, figure 8

Shell small, elongate-conic, with a narrow, light chestnut band showing low down on all but the first two whorls, the rest of the shell being light yellowish-white; nuclear whorls

<sup>13</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 60.

nearly three, helicoid, nearly vertical and about one-third immersed in the succeeding whorls; postnuclear whorls  $8\frac{1}{2}$ , well rounded, the first three or four most markedly, scarcely shouldered, marked by rather narrow, slightly retractive, irregular and irregularly spaced, sinuous, axial ribs extending over the base to the umbilical region, of which on the type, 16 appear on the first, 18 on the fourth, and 22 on the last whorl; intercostal spaces distinctly wider than the axial ribs, rather shallow, crossed by irregular and irregularly spaced, wavy, microscopic, incised spiral lines, not fewer than 20 in number, which rise on the sides of, but do not cross, the axial ribs; base well rounded, showing no sign of angulation, marked by about 20 rather broad, wavy, incised spiral lines, much stronger than those in the intercostal spaces, continuous over the feeble extensions of the axial ribs and becoming narrower and more closely spaced towards the umbilical region; sutures rather shallow and not well defined; aperture subpyriform; outer lip very thin, showing the external sculpture and color band very distinctly within, nearly straight and vertical to the color band, thence increasing its curvature regularly through the basal lip to a subangular junction with the columella; basal lip very slightly effuse near the columellar junction; columella slightly concave, scarcely revolute or reflected, slightly thickened but scarcely folded at its insertion; parietal wall not calloused and showing the spiral basal lines distinctly. Length, 4.5 mm.; diameter, 1.4 mm.

*Holotype*: No. 4011, Mus. Calif. Acad. Sci., taken by Fred Baker in 1921, near the main wharf at **La Paz, Lower California**, in three to four fathoms.

The species shows some resemblance in coloration to *T. newcombei* Dall & Bartsch<sup>14</sup> but it is proportionately narrower, with flatter whorls, less defined sutures and more axial ribs, which are slightly retractive. In the key to the subgenus *Pyrgolampros*<sup>15</sup> it could be placed between *T. valdezi* and *T. newcombei*.

<sup>14</sup> Proc. U. S. Nat. Mus., Vol. 33, 1907, p. 503, pl. 45, fig. 6.

<sup>15</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 60.

19. *Turbonilla (Pyrgolampros) francisquitana* Baker, Hanna & Strong, new species

Plate 11, figure 9

Shell small, rather stout, elongate-conic, light brown; nuclear whorls nearly vertical, not sharply differentiated from the succeeding turn, in which they are less than half immersed; postnuclear whorls  $7\frac{1}{2}$ , the upper ones strongly roundly shouldered, the later ones more squarely and less distinctly, marked by narrow, rounded sinuous, irregular and irregularly spaced, strongly protractive axial ribs which reach the umbilical region, 14 appearing on the earlier turns on the type and 18 on the later ones; intercostal spaces shallow, much broader than the axial ribs, everywhere marked by numerous very fine and indistinct incised spiral lines which sometimes cross the axial ribs and by a smaller number of much larger and irregularly spaced incised spiral lines which do not cross the axial ribs and which show most distinctly on the lower whorls and base; sutures deeply impressed but rendered ill-defined by the extensions of the axial ribs; base rounded, rather short; aperture roundly subquadrate, posterior angle rendered obtuse by the shoulder; outer lip following the narrow shoulder, then nearly vertical and flattened, curving sharply into the more rounded basal lip which is slightly effuse at its junction with the columella; columella nearly straight and vertical, moderately reflected and showing only a slight thickening at its insertion; parietal wall with very little callus. Length, 3.7 mm.; diameter, 1 mm.

*Holotype*: No. 4012, Mus. Calif. Acad. Sci., collected by Fred Baker in 1921, from San Francisquito Bay, Lower California.

The species differs in important characters from all other species of *Pyrgolampros* described from this coast, the most striking difference being the extreme protractivity of the axial ribs. In the key to the subgenus *Pyrgolampros* it could be placed between *T. gibbosa* and *T. ridgwayi*.

20. *Turbonilla (Pyrgiscus) macbridei* Dall & Bartsch

*Turbonilla (Pyrgiscus) macbridei* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 90, pl. 8, figs. 13, 13a.

The species was taken in beach drift on Espiritu Santo Island, Gulf of California, by George D. Porter; specimens have been deposited in the collections of the California Academy of Sciences and those of Messrs. Baker and Strong.

21. *Turbonilla (Pyrgiscus) porteri* Baker, Hanna & Strong,  
new species

Plate 11, figure 10

Shell of medium size, slender elongate-conic, light chestnut brown with a darker band at the summit and base of each whorl; nuclear whorls large and prominent, vertically placed and scarcely immersed in the succeeding whorl; postnuclear whorls  $9\frac{1}{2}$ , moderately high between the sutures, the earlier turns well rounded, the later ones flattened in the middle, the last very slightly inflated at the periphery, marked by numerous narrow, low, rounded, slightly protractive axial ribs which extend with little diminution to the umbilical region, about 16 appearing on the first postnuclear whorl, 18 on the fourth, and 22 on the penultimate; interspaces shallow, rather broader than the ribs, marked by nearly equal and equally spaced, squarish incised pits, not crossing the axial ribs, about 11 appearing on the lower whorls; sutures moderately impressed, crenulated by the ends of the axial ribs; base short, well rounded, with sculpturing only slightly less defined than that of the preceding whorl; aperture subpyriform, the posterior angle very acute; outer and basal lips sharp, the latter joining the columella at a rounded obtuse angle; columella nearly straight, oblique, slightly calloused and reflected but not twisted, with a low thickening at its insertion; parietal wall scarcely calloused, and slightly convex. Length, 5.2 mm.; diameter, 1.25 mm.

*Holotype*: No. 4013, Mus. Calif. Acad. Sci., collected by George D. Porter in the "Gulf of California."

The species suggests *T. (Pyrgiscus) cortezi* Bartsch<sup>16</sup> but is smaller for the same number of whorls, has fewer and protractive axial ribs and more incised spiral series of pits. The apex is like *T. asteca* of this paper, but the shells differ in many particulars.

The species is named for Captain George D. Porter, who, with his companion, John Johnson, was ambushed and killed in 1896 on Tiburon Island in the Gulf of California, by the Seri Indians. Their boat, which was owned by the late Miss J. M. Cooke of San Diego, was looted and burned. It was on this ill-fated expedition that Capt. Porter collected the various shells credited to him in this paper.

22. *Turbonilla (Pyrgiscus) johnsoni* Baker, Hanna & Strong,  
new species

Plate 11, figure 11

Shell slender, regularly elongate-conic, milk-white; nuclear and, probably, one or two postnuclear whorls decollated; remaining postnuclear whorls nearly 10, high between the sutures, very narrowly, squarely shouldered above, slightly rounded on the posterior two-thirds, more strongly on the anterior third, marked by narrow, unevenly spaced, generally straight and nearly vertical axial ribs becoming slightly retractive on the lower turns and tending to become double and indistinct on the last whorl, about 14 appearing on the first remaining turn, 18 on the fourth, and 32 on the penultimate; intercostal spaces shallow, nearly twice as wide as the axial ribs, crossed by rather narrow, irregular and irregularly spaced incised spiral lines or pits which are close above and more widely separated below, about 10 appearing on the upper whorls and 12 on the lower, dividing the intercostal spaces into irregular, squarish sections; sutures fairly impressed but rendered indistinct by the axial sculpturing; base moderate, well rounded, marked by obsolescent sculpture similar to that on the last whorl; aperture subrhomboidal, somewhat effuse at the junction of the basal lip and columella; outer and basal lips thin within, showing the external sculpture plainly, some-

<sup>16</sup> Proc. U. S. Nat. Mus., Vol. 52, 1917, p. 656, pl. 42, fig. 7; pl. 45, fig. 12.



what fractured and thickened on the edges in repairing; columella nearly vertical, roundly calloused and reflected, scarcely revolute, reinforced by a strong fold at its insertion; parietal wall thinly calloused. Length of remaining whorls, 6.35 mm.; diameter, 1.3 mm.

*Holotype*: No. 4014, Mus. Calif. Acad. Sci., collected by George D. Porter in the "Gulf of California."

In the key to the subgenus *Pyrgiscus*<sup>17</sup> this species would take a place after *T. (Pyrgiscus) wickhami* Dall & Bartsch<sup>18</sup> through certain resemblances, but differs from that species in even more particulars.

This species is named for Mr. John Johnson who was killed with Capt. Porter by the Seri Indians while collecting on Tiburon Island in 1896.

### 23. *Turbonilla (Pyrgiscus) mayana* Baker, Hanna & Strong, new species

Plate 11, figure 12

Shell rather small, elongate-conic, translucent, shining, light horn-colored; nuclear whorls of moderate size, prominent, inclined at an angle of about 60° and about one-fourth immersed in the succeeding turn; postnuclear whorls  $7\frac{3}{4}$ , narrowly, horizontally shouldered above, and somewhat coronated by the axial ribs, very moderately rounded, most decidedly on the lower quarter, marked by strong, narrow, irregular and irregularly placed, nearly vertical axial ribs extending faintly beyond the periphery, about 12 appearing on the first postnuclear whorl, 20 on the second to the fifth, and 22 on the last; intercostal spaces nearly twice as wide as the ribs, marked by from eight to 14 irregular and irregularly spaced, shallow, quadrangular pits on the various whorls, separated by low, laminate, wavy spiral cords which cross the axial ribs almost without change; sutures rendered indistinct by the ends of the axial ribs, not deeply impressed; periphery not distinctly defined; base moderate, very evenly rounded, marked by about 13 spiral cords, the first three or four laminate,

<sup>17</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 74.

<sup>18</sup> Op. cit., p. 106, pl. 10, fig. 9.

wavy, rather widely separated, the interspaces crossed by well marked growth lines, the anterior cords lower and broader and more closely crowded as they approach the umbilical region; aperture subpyriform, effuse near the base of the columella; outer and basal lips thin, showing the external sculpture very plainly within, the outer nearly straight and vertical at first, the curve increasing regularly to a point where the basal lip reinforces the columella; columella slightly concave and oblique, broadly reflected and free below, more narrowly calloused and adnate above; parietal wall with a rather heavy but narrow callus uniting the outer lip and the insertion of the columella. Length, 4.9 mm.; diameter, 1.4 mm.

*Holotype*: No. 4015, Mus. Calif. Acad. Sci., collected by George D. Porter in the "Gulf of California."

The species is probably as near *T. (Pyrgiscus) canfieldi* Dall & Bartsch<sup>19</sup> from Monterey, California, as any west coast species, but is a little stouter, with fewer and narrower axial ribs and proportionately broader interspaces, and seems to stand alone among the members of this genus on this coast in the particular form of the laminate cords crossing the axial ribs and intercostal spaces with little variation in size. It does not fit into the key to the subgenus *Pyrgiscus*<sup>20</sup> as now arranged but could be placed after *T. canfieldi*.

24. *Turbonilla (Pyrgiscus) tolteca* Baker, Hanna & Strong,  
new species

Plate 11, figure 13

Shell rather stout, elongate-conic, milk-white with a shading above and below the sutures suggestive of two faded color bands; nuclear and, probably, two postnuclear whorls decolated; remaining postnuclear whorls eight, rather high between the sutures, narrowly, slopingly shouldered above, flattened in the middle, slightly appressed below, marked by

<sup>19</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 95, pl. 9, figs. 3, 3a.

<sup>20</sup> Op. cit., p. 74.

irregular and irregularly spaced, low, indistinct, rounded, slightly protractive axial ribs which cross the periphery but scarcely reach the umbilical region, about 16 appearing on the first five remaining whorls and 20 on the penultimate; intercostal spaces shallow, wider than the axial ribs, rather flat at the bottom, crossed by irregularly spaced, narrow incised spiral lines which generally cross the axial ribs, rendering them irregularly tuberculate, the numbers varying on different whorls and at different places on the same whorl from 10 to 20; sutures rather distinctly defined by a narrow and very shallow channel; this channel continuing a little above the posterior angle of the aperture but soon disappearing; base rather short, well rounded, marked by the feeble continuations of the axial ribs and by very indistinct extensions of the incised spiral lines of the preceding whorls; aperture rather small, subrhomboidal; outer and basal lips thin, showing the external sculpture plainly within, each only moderately curved, and forming a subangulate junction; basal lip subtruncate; columella rather heavily calloused and broadly, flatly reflected, hiding a distinct umbilical depression; parietal wall with a narrow callus uniting the columella and the outer lip, thus forming an entire peritreme. Length of the remaining whorls, 6.25 mm.; diameter, 1.5 mm.

*Holotype*: No. 4016, Mus. Calif. Acad. Sci., collected by George D. Porter in the "Gulf of California."

The description of this species at several points follows almost the same wording as that of *T. (Pyrgiscus) johnsoni* of this paper, but the latter is a smaller, more slender shell with a larger number of whorls for the same measurements, a larger number of axial ribs which tend to become retractive on the lower whorls, and on each whorl, a smaller number of incised spiral lines which do not cross the axial ribs. The present species falls in another section of the key to the subgenus *Pyrgiscus*<sup>21</sup> and could probably be placed after *Turbonilla macbridei* Dall & Bartsch.<sup>22</sup>

---

<sup>21</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 74.

<sup>22</sup> Op. cit., p. 90, pl. 8, figs. 13, 13a.

25. *Turbonilla (Pyrgiscus) azteca* Baker, Hanna & Strong,  
new species

Plate 11, figure 14

Shell of medium size, rather slender, elongate-conic, white except at one point on the base which is light horn-colored; nuclear whorls large, prominent, opalescent, placed nearly vertically, scarcely immersed in the succeeding turn; postnuclear whorls  $8\frac{1}{2}$ , high between the sutures, the upper ones exerted, convex, the lower narrowly, distinctly shouldered and flattened in the middle; marked by strong, moderately rounded, generally straight and regularly spaced, strongly retractive axial ribs, which are indistinct on the first two postnuclear whorls but extend with little decrease in size to the umbilical region; of these on the type, 22 appear on the third to the fifth and 24 on the remaining whorls; interspaces well defined, about as wide as the axial ribs, marked on the holotype by six series of deep, irregularly rounded pits with a seventh marking the sutures, the axial ribs being rendered slightly tubercular in places by extensions from these pits; sutures deep, but rendered irregular by these pits and the extensions of the axial ribs; base well rounded, rather short, showing no change in sculpture from that of the last whorl, with about six spiral series of pits, the last two tending to become pitted sulci; aperture subrhomboidal; posterior angle acute, outer lip nearly straight, crenulated by the external sculpture; basal lip closely rounded, slightly effuse near the columellar junction; columella reflected, nearly straight and vertical, angulated and scarcely thickened at its insertion; parietal wall thinly caloused. Length, 6.35 mm.; diameter, 1.5 mm.

*Holotype*: No. 4017; *Paratypes*: Nos. 4018-4020, Mus. Calif. Acad. Sci., collected by Fred Baker from **San Luis Gonzaga Bay, Lower California**, in about four fathoms. Three additional specimens came from Coyote Bay, Concepcion Bay, Lower California, in about two fathoms, also collected by Fred Baker in 1921. A small spot on the holotype and one paratype is light horn-color, suggesting the probability that the holotype is faded. All specimens examined follow the

holotype very closely except that the number of spiral series of pits varies up to 10 in one specimen.

The species is related to *Turbonilla (Pyrgiscus) ceralva* Dall & Bartsch<sup>23</sup> but is much larger and has far fewer axial ribs. In the key to the subgenus *Pyrgiscus*<sup>24</sup> it could be placed before *T. ceralva*.

## 26. *Turbonilla (Pyrgiscus) lara* Dall & Bartsch

Plate 11, figure 15

*Turbonilla (Pyrgiscus) lara* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 107, pl. 10, figs. 6, 6a, 6b.

A single specimen dredged near the main wharf at La Paz, Lower California, in about four fathoms, varies but little from the description and figure above cited.

## 27. *Turbonilla (Pyrgiscus) larunda* Dall & Bartsch

Plate 11, figure 16

*Turbonilla (Pyrgiscus) larunda* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 109, pl. 10, fig. 4, 4a, 4b.

Two shells dredged in about two fathoms in Coyote Bay, Concepcion Bay, Lower California, seem to be this species. The best preserved one, not quite mature, has the spiral striation slightly different from that described in the above citation, but not enough to warrant its separation as a subspecies.

## 28. *Turbonilla (Mormula) coyotensis* Baker, Hanna & Strong, new species

Plate 11, figure 17

Shell of medium size for the subgenus, imperforate, slender, shining, nearly everywhere marked by fine growth lines and minute spiral striæ; light horn-colored; nuclear whorls not distinctively colored, nearly vertical, very slightly immersed in the

<sup>23</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 104, pl. 10, figs. 5, 5a.

<sup>24</sup> Op. cit., pp. 74-76.



succeeding turn; postnuclear whorls  $13\frac{1}{2}$ , moderately rounded, slightly more prominent on the lower third, marked by strong, rounded, frequently sinuous, slightly protractive axial ribs of which 16 occur on the first eight whorls, 18 on the next three, and 20 on the succeeding turns; moderate and ill-defined external varices appearing on the seventh, twelfth and thirteenth whorls; intercostal spaces more than twice as broad as the axial ribs, marked by deep, spiral incised lines, rather evenly spaced, of which there are usually eight on each whorl, but occasionally nine or ten; periphery marked by a broad, flat, indistinctly defined spiral band followed by about eight narrow cords also indistinctly defined by wavy, irregularly spaced incised spiral lines which are crossed by the obsolescent extensions of the axial ribs; base well rounded; aperture subrhomboidal, showing the external sculpture plainly within and very faint signs of color bands; outer and basal lips quite evenly rounded to a subangular junction with the columella, the basal lip being slightly effuse; columella nearly straight and vertical, rather slender, very slightly revolute, scarcely reflected, lightly calloused and showing no fold at its insertion; parietal wall thinly calloused. Length, 9.9 mm.; diameter, 2.4 mm.

*Holotype*: No. 4023; *paratype* No. 4024, Mus. Calif. Acad. Sci., collected by Fred Baker in **Coyote Bay, Concepcion Bay, Lower California**, in about two fathoms; *paratype*: No. 4025, from San Luis Gonzaga Bay, Lower California, in three or four fathoms, also collected by Fred Baker in 1921.

This species seems to be new, holding a position between *T. (Mormula) ambusta* Dall & Bartsch<sup>25</sup> from the California coast and *T. (Mormula) major* (C. B. Adams)<sup>26</sup> from Panama, differing from each in certain criteria about as much as they differ from each other. In the key to the subgenus *Mormula*<sup>27</sup> it could be placed between these two species.

---

<sup>25</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 115, pl. 11, fig. 13.

<sup>26</sup> *Chemnitzia major* C. B. Adams, Ann. Lyc. Nat. Hist., N. Y., Vol. 5, 1852, p. 391.

<sup>27</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 110.

29. *Turbonilla* (*Bartschella*) *excolpa* Dall & Bartsch

Plate 11, figure 18

*Turbonilla* (*Dunkeria*) *excolpa* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 123, pl. 12, figs. 4, 4a.

One shell dredged in shallow water at La Paz, Lower California, does not differ from the above, described from "Gulf of California," except in size; it is smaller but has fewer whorls and otherwise appears immature.

30. *Turbonilla* (*Bartschella*) *subangulata* (Carpenter)

Plate 11, figure 19

*Dunkeria subangulata* CARPENTER, Cat. Maz. Shells, 1856, p. 434.

*Turbonilla* (*Dunkeria*) *subangulata* (CARPENTER), DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 124, pl. 12, fig. 11.

A single shell dredged in shallow water in Coyote Bay, Concepcion Bay, and three from La Paz, Lower California, agree well with the description and figure of this species.

31. *Turbonilla* (*Pyrgisculus*) *monilifera* Dall & Bartsch

Plate 12, figure 1

*Turbonilla* (*Pyrgisculus*) *monilifera* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 126, pl. 12, fig. 15.

Two specimens dredged in about four fathoms at La Paz, Lower California, agree with the description of this species. As the nuclear whorls are missing from the type, the better specimen is figured.

32. *Turbonilla* (*Cingulina*) *urdeneta* Bartsch

*Turbonilla* (*Cingulina*) *urdeneta* BARTSCH, Proc. U. S. Nat. Mus., Vol. 52, 1917, p. 660, pl. 45, fig. 1.

A single specimen in the Baker collection was taken in beach drift on Espiritu Santo Island; Gulf of California, by George D. Porter.

33. *Turbonilla (Careliopsis) stenogyra* Dall & Bartsch

Plate 12, figure 2

*Turbonilla (Careliopsis) stenogyra* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 130, pl. 12, figs. 1, 1a.

A broken shell dredged in three to four fathoms in Puerto Escondido, Lower California, seems to belong here. This extends the range from the type locality, San Hypolito Point, to the gulf side of the Peninsula.

34. *Turbonilla (Cingulina) evermanni* Baker, Hanna & Strong, new species

Plate 12, figures 3, 4

Shell small, very thin, slender, elongate-conic, everywhere marked by very minute protractive growth lines but showing no signs of axial ribs; translucent, white; nuclear whorls very small, slightly exserted, inclined at an angle of about 45°, about one-fourth immersed in the succeeding whorl; postnuclear whorls eight, broadly, slopingly shouldered above, the flattened shoulder being nearly smooth and comprising about one-fourth of each whorl; all postnuclear whorls marked below the shoulder by nearly equal and equally spaced incised spiral lines, separated by low, rounded cords of about the same width as the incised lines, of which from five to nine appear on the several whorls; base well rounded, marked by incised spiral lines and cords exactly as in the lower portion of the preceding whorls; aperture suborbicular, posterior angle very obtuse; lips thin, showing the external sculpture from within; columella slightly concave, nearly vertical, slightly reflected, showing no fold at its insertion. Length, 2.50 mm.; diameter, 0.75 mm.

*Holotype*: No. 4029, Mus. Calif. Acad. Sci., dredged by Fred Baker in about four fathoms at **West Anchorage, San Jose Island, Gulf of California**. Another specimen is from Amortajada Bay on the same island from shallow water, also collected by Fred Baker in 1921.

The species is the second of the subgenus *Cingulina* described from this coast. It differs so radically from *Turbonilla*

(*Cingulina*) *urdeneta* Bartsch<sup>28</sup> that confusion of the species is hardly possible.

35. *Odostomia* (*Salassiella*) *laxa* Dall & Bartsch

*Odostomia* (*Salassiella*) *laxa* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 133, pl. 13, figs. 8, 8a.

Several specimens of this species were taken at Cape San Lucas, an extension southward from the type locality, Scammon Lagoon.

36. *Odostomia* (*Salassia*) *scalariformis* (Carpenter)

Plate 12, figure 5

*Parthenia scalariformis* CARPENTER, Cat. Maz. Shells, 1856, p. 413.

*Odostomia* (*Salassia*) *scalariformis* (CARPENTER), DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 135, pl. 13, fig. 1.

Five specimens from Cape San Lucas seem to agree with the description of Dall & Bartsch except for length of shell, "5 mm.", which probably is a misprint; the figure shows the diameter contained less than  $2\frac{1}{2}$  times in the length, the proportion being about the same as in our illustration. The best preserved of our five specimens shows fine, close, incised spiral lines over most of the shell, a character not mentioned in the description. Additional specimens were taken at San Francisco Bay, Lower California, Monserrate Island and Isthmus Bay, Espiritu Santo Island, Gulf of California.

37. *Odostomia* (*Salassia*) *gabrielensis* Baker, Hanna & Strong, new species

Plate 12, figure 6

Shell small, slender, pupiform, everywhere covered with rather distinct growth lines; translucent white; nuclear whorls somewhat exerted, small, smooth, inclined at an angle of about  $45^\circ$ , not sharply differentiated from the succeeding turn, in which they are partially immersed; postnuclear

<sup>28</sup> Proc. U. S. Nat. Mus., Vol. 52, 1917, pp. 660, 661, pl. 45, fig. 1.  
June 29, 1928

whorls  $5\frac{1}{4}$ , broadly, roundly, horizontally tabulated above and coronated by the upper ends of the axial ribs; nearly vertical and flat on the upper three-fourths, then contracting in a rather wide curve to a deeply impressed suture; axial ribs vertical, prominent, rounded, irregularly placed, with much wider interspaces, reaching the umbilical region, but becoming much weaker on the base, 10 on each whorl on the type; aperture oval, peristome continuous; outer and basal lips thin, the basal lip slightly effuse and narrowly curved into the columella; columella slender, concave, distinctly reflected producing a rather broad and deep groove behind it, with a prominent, deeply entering fold at its center, the reflection continuing over the parietal wall to a junction with the outer lip. Length, 3 mm.; diameter, 1 mm.; length of aperture, 0.75 mm.

*Holotype*: No. 4032; *paratype*: No. 4033; Mus. Calif. Acad. Sci., collected by Fred Baker from San Gabriel Bay, Espiritu Santo Island, Gulf of California. Other specimens were taken at Isthmus Bay, Espiritu Santo Island, Monserraté Island, and San Jose Island, Gulf of California, and from La Paz, Lower California; all collected by Fred Baker in 1921.

The species differs from *O. scalariformis* in being smaller, with a smaller number of axial ribs and these are almost vertical instead of retractive. All specimens taken at rather widely separated points agree almost absolutely in these characters.

### 38. *Odostomia* (Besla) *convexa* (Carpenter)

*Chrysalida convexa* CARPENTER, Cat. Maz. Shells, 1856, p. 424.

*Odostomia* (Besla) *convexa* (CARPENTER), DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 135, pl. 13, fig. 4.

A single specimen of this species was taken at San Luis Gonzaga Bay, Lower California. The specimen has seven postnuclear whorls, making it longer and more slender than the specimen described and figured by Dall & Bartsch.



39. *Odostomia (Chrysallida) vizcainoana* Baker, Hanna & Strong, new species

Plate 12, figure 10

Shell of medium size, elongate-conic, white; nuclear whorls decollated; postnuclear whorls seven, rather high between the sutures, nearly straight, narrowly, nearly tabulately shouldered above, marked by rather narrow, prominent, somewhat irregular and irregularly-spaced, but generally nearly vertical axial ribs extending over the peripheral cord and much less distinctly to the umbilical region, their upper extremities distinctly enlarged, giving the whorls a coronated appearance; 16 appearing on the later whorls in the type; intercostal spaces wider than the axial ribs, crossed by almost laminate spiral cords rising about half as high as the axial ribs, enclosing rather large, squarish pits tending to be elongate spirally and widest at their upper parts, the intersections being more or less tuberculate; three spiral cords appear on the first post-nuclear whorl, four on the middle and five on the later turns; sutures channeled but rendered uneven by the extensions of the axial ribs and the peripheral cord; base well rounded, rather long, with a tuberculate peripheral cord extending into the sutures as a thin roughened thread for one or more turns, and about 10 narrow basal cords becoming obsolete as they approach the umbilical region; aperture quite regularly elongate-pyriform but somewhat flattened on the columellar side; outer lip sharp, basal lip effuse; columella concave, not revolute, rather broadly and adnatly reflected below, narrowly above, and armed with a heavy fold at its insertion; parietal wall lightly calloused. Length, 3.6 mm.; diameter, 1.2 mm.

*Holotype*: No. 4034; *paratypes*: Nos. 4035-4037, Mus. Calif. Acad. Sci., taken by Fred Baker in about four fathoms off the main wharf at **La Paz, Lower California**. Other specimens were taken at Puerto Escondido and Agua Verde Bay, Lower California and at two points on San Jose Island. There is a specimen in the Baker collection taken by George D. Porter in beach drift on Espiritu Santo Island.

The species is quite variable, especially in the degree of shouldering of the upper ends of the whorls and in the direction of the axial ribs, some specimens having both protractive

and retractive ribs, the latter generally on the last whorl. The specimens retaining the nuclear whorls show them very small, not quite vertically placed and very deeply immersed in the succeeding whorl, from which they are not sharply differentiated. In the key to the subgenus *Chrysallida*<sup>20</sup> it could be placed between *O. acrybia* and *O. communis*, since it has about the same number of basal cords, but both these species have more axial ribs and fewer spiral cords.

The species is named for the explorer, Sebastian Vizcaino, who visited Lower California in the sixteenth century.

40. *Odostomia (Chrysallida) audax* Baker, Hanna & Strong, new species

Plate 12, figure 7

Shell small, ovate-conic, everywhere marked by minute growth lines, white; nuclear whorls small, opalescent, not quite vertical, about two-fifths immersed in the succeeding turn; postnuclear whorls  $4\frac{1}{2}$ , moderately, evenly rounded, narrowly, almost tabulately shouldered above, angled and narrowly contracted below, marked by broad, low, rounded, irregular, slightly retractive axial ribs, with about 12 to 20 appearing on the various whorls; intercostal spaces narrow, marked by low, narrow spiral cords, of which five appear on all but the first whorl, tending to divide on the last whorl, thus showing five ill-defined pairs; axial ribs flatly tuberculate, terminating on the last spiral cord; sutures deeply channeled, somewhat crenulated by the ends of the axial ribs; base evenly rounded, rather long, showing no distinct peripheral cord but marked by a small fasciole and seven scarcely tuberculate basal cords which gradually decrease in size towards the umbilical region and are separated by sulci which are deeper and better defined than the pits between the spiral cords of the rest of the shell; aperture quite evenly pyriform; lips thin, peristome nearly continuous, the narrow callus of the columella being scarcely separable except by the slight thickening of the columella at its insertion. Length, 2.5 mm.; diameter, 0.95 mm.

---

<sup>20</sup> Bull. 68, U. S. Nat. Mus., 1909, pp. 137, 138.

*Holotype*: No. 4038; *paratype*: No. 4039, Mus. Calif. Acad. Sci., collected by G. D. Hanna and E. K. Jordan at **Cape San Lucas, Lower California**. A paratype is deposited in each of the collections of Baker and Strong. A worn specimen from La Paz seems to be the same species.

The species is similar to *O. (Chrysallida) tyleri* Dall & Bartsch<sup>30</sup> but differs in the strongly channeled sutures, the earlier occurrence of five spiral cords on each whorl and in the breaking up of these cords on the last whorl, a character shown also by the paratype. In the key to the subgenus *Chrysallida*<sup>31</sup> it must be separated from *O. tyleri* on account of the channeled sutures and could be placed after *O. telescopium*.

41. *Odostomia (Chrysallida) contrerasi* Baker, Hanna & Strong, new species

Plate 12, figure 13

Shell of medium size, elongate-conic, quite generally marked by distinct and very retractive growth lines, covered by a thin, fugaceous, light straw-colored epidermis, denuded spots showing white; nuclear whorls rather prominent, widely exerted, placed at an angle of about 30° from the horizontal, scarcely immersed in the succeeding turn; postnuclear whorls five, indistinctly differentiated from the last nuclear whorl by the faint beginning of the postnuclear sculpture, very narrowly, almost tabulately shouldered at the summit, moderately, rather evenly rounded, marked by four, low, rounded spiral cords on all but the last whorl, the upper two of which are rather narrow and nearly equal, the other two broader and more widely spaced, all tending to become equal on the last whorl, where a fifth narrow cord appears on the periphery; axial ribs feeble, best developed on the upper whorls where the intersections with the spiral cords form weak nodules, most distinct on the upper two cords and only indicated on the last whorl by indistinct punctations in the incised lines delimiting the spiral cords; sutures well impressed, but rendered indis-

<sup>30</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 157, pl. 16, fig 5

<sup>31</sup> Bull. 68, U. S. Nat. Mus., 1909, pp. 137, 138.

tinct by the extension of the peripheral cord which, in places, is not entirely covered by the preceding whorl; base well rounded, marked by very strong lines of growth and six gradually diminishing spiral cords with several minute spiral cords intercalated between them; aperture oblique, rather narrowly pyriform, effuse near the columellar base; outer and basal lips thin, crenulated by the external sculpture which shows plainly within; columella concave, with a distinct tooth at its insertion and a flattened, reflected callus; parietal wall thinly and narrowly calloused. Length, 3.75 mm.; diameter, 1.80 mm.

*Holotype*: No. 4040, Mus. Calif. Acad. Sci., and two paratypes in the collections of Strong and Baker, collected by George D. Porter in the "Gulf of California."

This species somewhat resembles *Odostomia (Chrysallida) sanctorum* Dall & Bartsch<sup>32</sup> from Todos Santos Bay near the boundary between California and Lower California and, in a less degree, *O. (Chrysallida) deceptrix* Dall & Bartsch<sup>33</sup> from Abreojos Point on the west side of the peninsula of Lower California. It differs radically from both in the distinct tuberculation of the upper two spiral cords. In the key to the subgenus *Chrysallida*<sup>34</sup> it could be placed before *O. deceptrix* with the added legend: "Spiral cords moderate."

The species is named for Professor Francisco Contreras, Director of the National Museum of Natural History of Mexico, an authority on conchology, who was a member of the Academy's Expedition to the Gulf of California in 1921.

#### 42. *Odostomia (Chrysallida) ovata* (Carpenter)

*Chrysallida ovata* CARPENTER, Cat. Maz. Shells, 1856, p. 417.

*Odostomia (Chrysallida) ovata* (CARPENTER), DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 152, pl. 15, figs. 7, 7a.

Several shells from Cape San Lucas, Lower California, agree well with the description and figure of this species.

<sup>32</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 167, pl. 18, fig. 1.

<sup>33</sup> Op. cit., p. 169, pl. 17, fig. 1.

<sup>34</sup> Op. cit., p. 137.

43. *Odostomia (Chrysallida) lapazana* Dall & Bartsch

*Odostomia (Chrysallida) lapazana* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 156, pl. 16, figs. 9, 9a.

A single shell from Cape San Lucas, Lower California, agrees with the description and figure of this species.

44. *Odostomia (Chrysallida) fasciata* (Carpenter)

*Chrysallida fasciata* CARPENTER, Cat. Maz. Shells, 1856, p. 423.

*Odostomia (Chrysallida) fasciata* (CARPENTER), DALL & BARTSCH, Bull., 68, U. S. Nat. Mus., 1909, p. 165, pl. 17, fig. 2.

Two shells from Cape San Lucas, Lower California agree with the description and figure of this species.

45. *Odostomia (Pyrgulina) herrerae* Baker, Hanna & Strong,  
new species

Plate 12, figure 9

Shell of medium size, elongate-conic, shining, milk-white; nuclear whorls rather large, opalescent, somewhat exserted, nearly vertically placed and about one-third immersed in the succeeding turn; postnuclear whorls  $5\frac{3}{4}$ , slopingly shouldered above for about one fifth of the whorl, with a close, narrow, appressed line in this shoulder below the sutures, moderately rounded below the shoulder, high between the sutures, marked by narrow, rounded, nearly vertical axial ribs, more distinct on the appressed portion of each whorl and reaching the umbilical region with little diminution; about 16 appearing on the first three and 20 on the remaining whorls; intercostal spaces unequal, three to four times as wide as the axial ribs, crossed by very numerous fine, wavy, incised spiral lines which rise on the sides of the axial ribs but cross them very irregularly, between 30 and 40, appearing on the penultimate whorl; sutures deep but not well defined; base long, well rounded at the periphery but flattened or slightly concave below, marked by the same sculpture as the preceding whorl; aperture oblique, quite regularly pyriform with an obtuse posterior angle; peritreme completed by a very narrow parietal callus, the outer and basal lip, columella and parietal



wall not being distinctly definable. Length, 3.4 mm.; diameter, 1.12 mm.

*Holotype*: No. 4041, Mus. Calif. Acad. Sci., collected by George D. Porter in the "Gulf of California."

This species is easily distinguished from *Odostomia* (*Pyrgulina*) *marginata* (C. B. Adams),<sup>35</sup> the only other species of the subgenus *Pyrgulina* described from this coast so far as we are able to determine. It is longer and more slender, has more axial ribs and many more incised spiral lines in the inter-spaces.

The species is dedicated to Professor A. L. Herrera, Director of the Mexican Biological Survey.

46. *Odostomia* (*Ividella*) *mendozæ* Baker, Hanna & Strong,  
new species

Plate 12, figure 11

Shell small, thin, minutely perforate, subdiaphanous, white; nuclear whorls small, exserted, inclined at an angle of about 45°, not deeply immersed in the succeeding turn; postnuclear whorls 4½, broadly, tabulately shouldered above and coronated by the ends of the axial ribs, nearly flat below the shoulder strongly contracted on the anterior third, marked by laminate, irregular and irregularly spaced, nearly vertical axial ribs, 14 appearing on the first and second whorls in the type, 18 on the third, 20 on the last, and becoming obsolete below the peripheral cord; crossed by three rather less prominent, laminated spiral keels, forming minute, rounded tubercles at the intersections, nearly equally spaced, one at the edge of the shoulder, the other two dividing the rest of the whorl into three spaces of which the posterior is slightly wider, with a fourth cord beginning in the suture and continuing as a peripheral keel; base rounded, rather long, marked by two roughened but not tubercular spiral keels which are less laminate than those on the body whorls, separated from each other by a widening sulcus broader than that between the peripheral

<sup>35</sup> *Chemnitzia marginata* C. B. ADAMS, Ann. Lyc. Nat. Hist. N. Y., Vol. 5, 1852, pp. 391, 392, = *Odostomia* (*Pyrgulina*) *marginata* (C. B. ADAMS), DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 169, pl. 18, figs. 5, 5a.

and first basal keels, these sulci being crossed by rather strong growth lines replacing the axial ribs; sutures widely and indistinctly channeled; aperture broadly subovate; outer and basal lips thin, showing the external sculpture very plainly within, irregularly crenulated by the external sculpture; columella very concave, narrowly calloused, slightly reflected, scarcely thickened at its insertion; parietal wall not calloused, crossed by the basal keels. Length, 2.0 mm.; diameter, 0.95 mm.

*Holotype*: No. 4042; *paratypes*: Nos. 4043-4045, Mus. Calif. Acad. Sci., collected by G. D. Hanna and E. K. Jordan in 1925 at **Cape San Lucas, Lower California**. Additional paratypes are in the collections of Baker and Strong.

The species resembles *Odostomia (Ividella) navisa* Dall & Bartsch<sup>36</sup> and its subspecies *delmontensis*, but differs in the presence of a third spiral keel, well marked on all the post-nuclear whorls except the first. In the key to the subgenus *Ividella* it could be placed after the subspecies *delmontensis*<sup>37</sup>.

The species is named for Bezerra de Mendoza who, with Grijalva, discovered Lower California in 1534.

#### 47. *Odostomia (Ividella) pedroana* Dall & Bartsch

Plate 12, figure 12

*Odostomia (Ividella) pedroana* DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 172, pl. 19, figs. 8, 8a. Type locality, San Pedro, California.

One shell of this species was dredged in Coyote Bay, Concepcion Bay, Lower California, and another at the northeast end of Monserrate Island. Both are markedly more slender than the original figure and than most of the specimens from the California coast, but as the more obese form occurs in the Baker collection among a lot taken by Captain George D. Porter in the Gulf of California, it is evident that the slender form does not constitute a distinct gulf race. The most southerly record heretofore is that of a single specimen taken at Scammon Lagoon on the opposite side of the peninsula.

<sup>36</sup> Bull. 68, U. S. Nat. Mus., 1909, pp. 173, pl. 18, fig. 11, 11a.

<sup>37</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 172.

48. *Odostomia (Miralda) porteri* Baker, Hanna & Strong,  
new species

Plate 12, figure 8

Shell small, slender, regularly elongate-conic, shining, milk-white; nuclear whorls small, opalescent, inclined at an angle and very deeply immersed in the succeeding turn; postnuclear whorls six, the first two marked by two strong, rounded, tuberculate spiral keels tending to turn up slightly at the edges, rather widely separated, the intervening sulci being crossed by strong and very strongly protractive, sinuous axial threads seeming to correspond with the indistinct tubercles; beginning in the suture in the second turn and appressed to the preceding keel a narrow, tuberculate spiral keel appears, increasing slowly to about three-fourths the size of the other two on the last turn, the sides sloping much less abruptly above than below, and separating from the next keel until the dividing sulcus is about three-fourths as wide as that between the first and second keels; the newly formed sulcus crossed by slightly retractive axial threads corresponding to those on the upper sulcus except in direction; sutures narrowly and rather indistinctly channeled; periphery marked by a low, narrow keel splitting off from the anterior keel on the penultimate turn, separating from it gradually and gradually increasing in size; base short, rounded behind, but tending to become concave on the umbilical side, marked by three nearly smooth, narrow basal keels beginning on the parietal wall, the sulci between the peripheral keel and the basal keels widening gradually as they advance and crossed by numerous fine lines of growth; aperture very irregularly ovate; outer and basal lips deeply crenulated by the external sculpture, the basal lip joining the columella at an obtuse angle; columella strongly curved, slightly grooved on its face, armed with a very strong tooth at its insertion; parietal wall roughened by the beginnings of the basal keels. Length, 1.9; diameter, 0.7 mm.

*Holotype*: No. 4047; Mus. Calif. Acad. Sci., collected by George D. Porter in the "Gulf of California"; two paratypes are in the Baker collection.

This species is very distinct from all *Odostomias* described from this coast. It resembles *O. hemphilli* Dall & Bartsch<sup>38</sup> by having the same number of spiral keels between the sutures and basal keels, but differs radically in being more slender, in the position and tuberculation of the spiral keels and especially in the marking of the sulci between the keels. In the key<sup>39</sup> to the subgenus *Miralda* it could be placed before *O. hemphilli* with some modification of the key to separate the two species.

The species is named for Capt. George D. Porter who collected it.

49. *Odostomia* (*Miralda*) *æpynota planicosta* Baker, Hanna & Strong, new subspecies

Plate 12, figure 14

*Holotype*: No. 4048; *paratypes*: Nos. 4049-4053, Mus. Calif. Acad. Sci., from Cape San Lucas, Lower California. These differ from *Odostomia* (*Miralda*) *æpynota* Dall & Bartsch<sup>40</sup> by having none of the spiral keels showing any of the tuberculation characteristic of the type, and in the larger size. Length, 2.16 mm.; diameter, 1.0 mm.

50. *Odostomia* (*Iolæa*) *delicatula* Carpenter

Plate 12, figure 15

*Odostomia* (*Evalea*) *delicatula* CARPENTER, Ann. Mag. Nat. Hist., Vol. 14, 1864, p. 47.

*Odostomia* (*Iolæa*) *delicatula* CARPENTER, DALL & BARTSCH, Bull. 68, U. S. Nat. Mus. 1909, pp. 183, 184, pl. 20, figs. 5, 5a.

Numerous specimens were taken at Cape San Lucas, Lower California, which agree well with the description and figure of this species.

<sup>38</sup> Bull. 68, U. S. Nat. Mus., 1909, p. 176, pl. 19, fig. 10.

<sup>39</sup> Op. cit., p. 176.

<sup>40</sup> Bull. 68, U. S. Nat. Mus., 1909, pl. 178, pl. 19, fig. 5.

51. *Odostomia* (*Menestho*) *grijalvæ* Baker, Hanna & Strong,  
new species

Plate 12, figure 16

Shell small, very thin, translucent, shining, everywhere marked by minute growth lines, elongate-conic, milk white; nuclear whorls small, exserted, inclined at an angle, rather deeply immersed in the succeeding whorl from which they are scarcely differentiated; postnuclear whorls  $4\frac{1}{4}$ , rather high between the sutures, decidedly, evenly rounded, contracted about evenly above and below, marked by three uneven, broad, low spiral cords, separated by two series of pitted spiral lines on each whorl leaving the middle cord nearly twice as broad as those above and below it, with a third pitted spiral line arising almost in the suture of the second turn and continuing until it circles the periphery; base rather long, evenly rounded, marked by two pitted spiral lines beginning close together on the parietal wall and separating as they advance; aperture very regularly elongate-pyriform; outer and basal lips very thin, showing the external sculpture very plainly within, *the pits appearing as minute horse-shoes opening outward*; peristome continuous; columella curved, reinforced by the base, very slightly reflected and marked by a moderate, entering fold at its insertion; parietal wall without callus. Length, 2.0 mm.; diameter, 0.85 mm.

*Holotype*: No. 4055; *paratype*: No. 4056, Mus. Calif. Acad. Sci., collected by G. D. Hanna and E. K. Jordan in 1925 at **Cape San Lucas, Lower California.**

This species differs from all others of the subgenus *Menestho* described from this coast in the number of spiral cords between the sutures except *Odostomia recta* (de Folin),<sup>41</sup> from which it differs in the arrangement of the cords, in being much more slender and in the well defined sutures. It does not fit well in the key of the subgenus

---

<sup>41</sup> *Odetta recta* de Folin, Les Fonds de la Mer, Vol. 2, 1872, pp. 167, 168.



*Menestho*<sup>42</sup> as arranged by Dall & Bartsch, but probably could best be placed between *O. grammatospira* and *O. pharcida*.

The species is named for Hernando de Grijalva who, with Mendoza, discovered Lower California in 1534.

52. *Odostomia* (*Menestho*) *navarettei* Baker, Hanna & Strong, new species

Plate 12, figure 17

Shell conical, white, composed of two smooth nuclear and four postnuclear whorls; sides of whorls flat; sutures deeply channeled; postnuclear whorls marked with prominent, rounded spiral cords, obsolete on the upper turns but showing eight on the penultimate; interspaces nearly as wide as the cords, deep; peripheral and basal cords indistinct, at least six; aperture ovate; lips slightly expanded basally. Length, 2.6 mm.; diameter, 1.4 mm.

*Holotype*: No. 4057, Mus. Calif. Acad. Sci., collected by Fred Baker in 1921 from Amortajada Bay, San Jose Island, Gulf of California.

This species is probably nearer to *O. æquisculpta* Carpenter<sup>43</sup> than any other from this coast, but differs in the straight sides, more globose form and heavier spiral sculpture. In the key to the subgenus *Menestho*<sup>44</sup> it could be placed after *O. æquisculpta*.

The species is named for the historian, Martin Fernandez de Navarette.

53. *Odostomia* (*Menestho*) *æquisculpta* Carpenter

Plate 12, figure 18

*Odostomia* (*Evalea*) *æquisculpta* CARPENTER, Ann. Mag. Nat. Hist., 3rd Ser., Vol. 14, 1864, pp. 46, 47.

*Odostomia* (*Menestho*) *æquisculpta* CARPENTER, DALL & BARTSCH, Bull. 68, U. S. Nat. Mus., 1909, p. 191, pl. 20, fig. 3, 3a.

<sup>42</sup> Bull. 68, U. S. Nat. Mus., p. 184.

<sup>43</sup> See references under species No. 53.

<sup>44</sup> Bull. 68, U. S. Nat. Mus., p. 184.

Ten specimens from Cape San Lucas, Lower California, agree with the description and figure of the unique type, from the same locality, in all particulars except that they have more spiral cords. The type has four on the first, five on the second, six on the penultimate whorl, and six on the periphery and base. Our more mature shells show seven on the second, and nine on the penultimate whorl, with nine on the periphery and base. As these are the only specimens of the species which seem to have been reported, we infer that they represent a more characteristic form and it appears best not to establish a new subspecies at present.

## PLATE 11

- Fig. 1. *Pyramidella (Longchæus) bicolor* Menke. Plesiotype, No. 4000 (C. A. S.) from San Luis Gonzaga Bay, Lower California; length 10 mm.; diameter, 3.75 mm.; p. 208.
- Fig. 2. *Turbonilla (Chemnitzia) amortajadensis* Baker, Hanna & Strong, n. sp. Holotype, No. 4001, from Amortajada Bay, San Jose Island, Gulf of California; length 2.8 mm.; diameter .75 mm.; p. 209.
- Fig. 3. *Turbonilla (Chemnitzia) muricata* (Carpenter). Plesiotype, No. 4002 (C. A. S.), from Monserrate Island, Gulf of California; length 2.6 mm.; diameter 1.0 mm.; p. 210.
- Fig. 4. *Turbonilla (Strioturbonilla) schmitti* Bartsch. Plesiotype, No. 4003 (C. A. S.), from San Francisquito Bay, Lower California; length 2.66 mm.; diameter 1.0 mm.; p. 211.
- Fig. 5. *Turbonilla (Strioturbonilla) nahuana* Baker, Hanna & Strong, n. sp. Holotype, No. 4004 (C. A. S.), from "Gulf of California"; length 2.5 mm.; diameter .8 mm.; p. 211.
- Fig. 6. *Turbonilla (Strioturbonilla) chalcana* Baker, Hanna & Strong, n. sp. Holotype, No. 4005 (C. A. S.), from "Gulf of California"; length 3.6 mm.; diameter 1.1 mm.; p. 212.
- Fig. 7. *Turbonilla (Pyrgolampros) gonzagensis* Baker, Hanna & Strong, n. sp. Holotype, No. 4006 (C. A. S.), from San Luis Gonzaga Bay, Lower California; length 6.4 mm.; diameter 1.4 mm.; p. 213.
- Fig. 8. *Turbonilla (Pyrgolampros) pazensis* Baker, Hanna & Strong, n. sp. Holotype, No. 4011 (C. A. S.), from La Paz, Lower California; length 4.5 mm.; diameter 1.4 mm.; p. 214.
- Fig. 9. *Turbonilla (Pyrgolampros) francisquitana* Baker, Hanna & Strong. Holotype, No. 4012 (C. A. S.), from San Francisquito Bay, Lower California; length 3.7 mm.; diameter 1.0 mm.; p. 216.
- Fig. 10. *Turbonilla (Pyrgiscus) porteri* Baker, Hanna & Strong, n. sp. Holotype, No. 4013 (C. A. S.), from "Gulf of California"; length 5.2 mm.; diameter 1.25 mm.; p. 217.
- Fig. 11. *Turbonilla (Pyrgiscus) johnsoni* Baker, Hanna & Strong, n. sp. Holotype, No. 4014 (C. A. S.), from "Gulf of California"; length 6.35 mm.; diameter 1.3 mm.; p. 218.
- Fig. 12. *Turbonilla (Pyrgiscus) mayana* Baker, Hanna & Strong, n. sp. Holotype, No. 4015 (C. A. S.), from "Gulf of California"; length 4.9 mm.; diameter 1.4 mm.; p. 219.
- Fig. 13. *Turbonilla (Pyrgiscus) tolleca* Baker, Hanna & Strong, n. sp. Holotype, No. 4016 (C. A. S.), from "Gulf of California"; length 6.25 mm.; diameter 1.5 mm.; p. 220.

Plate 11 continued on next page

## PLATE 11—Continued from preceding page

- Fig. 14. *Turbonilla (Pyrgiscus) azteca* Baker, Hanna & Strong, n. sp. Holotype, No. 4017 (C. A. S.), from San Luis Gonzaga Bay, Lower California; length 6.35 mm.; diameter 1.5 mm.; p. 222.
- Fig. 15. *Turbonilla (Pyrgiscus) lara* Dall & Bartsch. Plesiotype, No. 4021 (C. A. S.), from La Paz, Lower California; length 4.66 mm.; diameter 1.2 mm.; p. 223.
- Fig. 16. *Turbonilla (Mormula) larunda* Dall & Bartsch. Plesiotype, No. 4022 (C. A. S.), from Coyote Bay, Concepcion Bay, Lower California; length 2.50 mm.; diameter 0.80 mm.; p. 223.
- Fig. 17. *Turbonilla (Mormula) coyotensis* Baker, Hanna & Strong, n. sp. Holotype, No. 4023 (C. A. S.), from Coyote Bay, Concepcion Bay, Lower California; length 9.9 mm.; diameter 2.4 mm.; p. 223.
- Fig. 18. *Turbonilla (Bartschella) excolpa* Dall & Bartsch. Plesiotype, No. 4026 (C. A. S.), from La Paz, Lower California; length 2.54 mm.; diameter 0.90 mm.; p. 225.
- Fig. 19. *Turbonilla (Bartschella) subangulata* (Carpenter). Plesiotype, No. 4027 (C. A. S.), from Coyote Bay, Concepcion Bay, Lower California; length 2.33 mm.; diameter 0.91 mm.; p. 225.



1



2



3



4



5



6



7



8



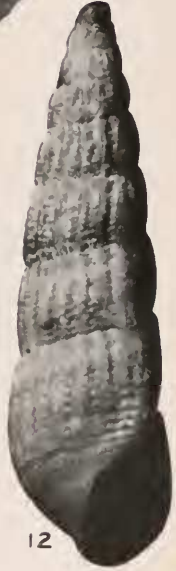
9



10



11



12



13



14



15



16



17



18



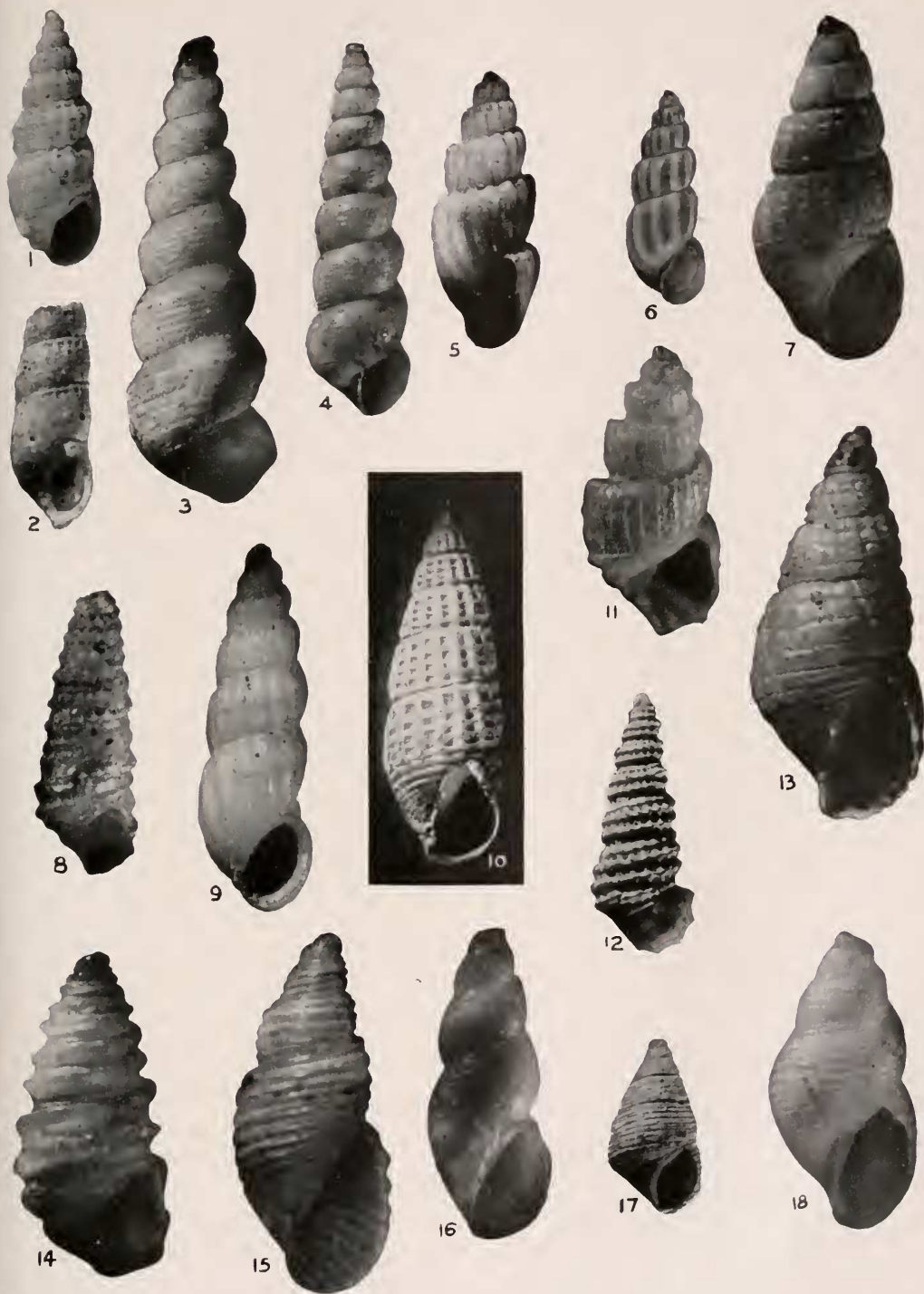
19



## PLATE 12

- Fig. 1. *Turbonilla (Pyrgisculus) monilifera* Dall & Bartsch. Plesiotype, No. 4028 (C. A. S.), from La Paz, Lower California; length 4.33 mm.; diameter 1.5 mm.; p. 225.
- Fig. 2. *Turbonilla (Careliopsis) stenogyra* Dall & Bartsch. Plesiotype, No. 4029 (C. A. S.), from Puerto Escondido, Lower California; length (incomplete) 2.16 mm.; diameter 0.73 mm.; p. 226.
- Fig. 3. *Turbonilla (Cingulina) evermanni* Baker, Hanna & Strong, n. sp. Holotype, No. 4029 (C. A. S.), from Amortajada Bay, San Jose Island, Gulf of California; length 2.50 mm.; diameter 0.75 mm.; p. 226.
- Fig. 4. *Turbonilla (Cingulina) evermanni* Baker, Hanna & Strong, n. sp. Photograph of another specimen (length 3.71 mm.; diameter 0.75 mm.), showing adult characters; this specimen was accidentally lost after the photograph was made; p. 226.
- Fig. 5. *Odostomia (Salassia) scalariformis* (Carpenter). Plesiotype, No. 4031 (C. A. S.), from Cape San Lucas, Lower California; length 2.64 mm.; diameter 1.16 mm.; p. 227.
- Fig. 6. *Odostomia (Salassia) gabriellensis* Baker, Hanna & Strong, n. sp. Holotype, No. 4032 (C. A. S.), from San Gabriel Bay, Espiritu Santo Island, Gulf of California; length 3.0 mm.; diameter 1.0 mm.; p. 227.
- Fig. 7. *Odostomia (Chrysallida) audax* Baker, Hanna & Strong, n. sp. Holotype, No. 4038 (C. A. S.), from Cape San Lucas, Lower California; length 2.5 mm.; diameter .95 mm.; p. 230.
- Fig. 8. *Odostomia (Miralda) porteri* Baker, Hanna & Strong, n. sp. Holotype, No. 4047 (C. A. S.), from "Gulf of California"; length 1.9 mm.; diameter 0.7 mm.; p. 236.
- Fig. 9. *Odostomia (Pyrgulina) herrerae* Baker, Hanna & Strong, n. sp. Holotype, No. 4041 (C. A. S.), from "Gulf of California"; length 3.4 mm.; diameter 1.12 mm.; p. 233.
- Fig. 10. *Odostomia (Chrysallida) vizcainoana* Baker, Hanna & Strong, n. sp. Holotype, No. 4034 (C. A. S.), from La Paz, Lower California; length 3.6 mm.; diameter 1.2 mm.; p. 229.
- Fig. 11. *Odostomia (Ividella) mendozæ* Baker, Hanna & Strong, n. sp. Holotype, No. 4042 (C. A. S.), from Cape San Lucas, Lower California; length 2.0 mm.; diameter .95 mm.; p. 234.
- Fig. 12. *Odostomia (Ividella) pedroana* Dall & Bartsch. Plesiotype, No. 4046 (C. A. S.), from Monserrate Island, Gulf of California; length 3.89 mm.; diameter 1.45 mm.; p. 235.

Plate 12 continued on page 246



## PLATE 12—Continued from page 244

- Fig. 13. *Odostomia (Chrysallida) contrerasi* Baker, Hanna & Strong, n. sp. Holotype, No. 4040 (C. A. S.), from "Gulf of California"; length 3.75 mm.; diameter 1.80 mm.; p. 231.
- Fig. 14. *Odostomia (Miralda) æfynota planicosta* Baker, Hanna & Strong, n. subsp. Holotype, No. 4048 (C. A. S.), from Cape San Lucas, Lower California; length 2.16 mm.; diameter 1.0 mm.; p. 237.
- Fig. 15. *Odostomia (Iolæa) delicatula* Carpenter. Plesiotype, No. 4054 (C. A. S.), from Cape San Lucas, Lower California; length 2.25 mm.; diameter 1.10 mm.; p. 237.
- Fig. 16. *Odostomia (Menestho) grijalvæ* Baker, Hanna & Strong, n. sp. Holotype, No. 4055 (C. A. S.), from Cape San Lucas, Lower California; length 2.0 mm.; diameter .85 mm.; p. 238.
- Fig. 17. *Odostomia (Menestho) navarretei* Baker, Hanna & Strong, n. sp. Holotype, No. 4057 (C. A. S.), from Amortajada Bay, San Jose Island, Gulf of California; length 2.6 mm.; diameter 1.4 mm.; p. 239.
- Fig. 18. *Odostomia (Menestho) æquisculpta* Carpenter. Plesiotype, No. 4058 (C. A. S.), from Cape San Lucas, Lower California; length 1.66 mm.; diameter 0.90 mm.; p. 239.